

Appl. No. 09/771,809

Atty Docket No.: APP 1372-US (15884-54)

CLAIM AMENDMENTS

Claims 1 (Withdrawn): A method of synthesizing a particulate zero strain lithium titanate intercalation compound comprising:

providing a homogeneous precursor mixture comprising nanostructure TiO₂ and at least one thermolabile source of lithium ions;

heating said precursor mixture rapidly to an annealing temperature of about 750-800°C;

holding said mixture at said annealing temperature for a period of time not substantially longer than that required to effect the maximum available reaction of said mixed precursor components in synthesizing said intercalation compound particles; and

cooling said synthesized particles rapidly to a temperature below the reaction temperature required for the synthesis of said intercalation compound, thereby preventing further growth of said particles.

Claim 2 (Withdrawn): A method according to claim 1 wherein said step of heating said precursor mixture comprises heating to said annealing temperature in about 2 minutes in the presence of a heating medium.

Claim 3 (Withdrawn): A method according to claim 2 wherein said heating medium consists essentially of ambient atmosphere.

Claim 4 (Withdrawn): A method according to claim 1 wherein said step of holding said mixture comprises holding at said annealing temperature for about 15-30 minutes in the presence of a heating medium.

Claim 5 (Withdrawn): A method according to claim 4 wherein said heating medium consists essentially of ambient atmosphere.

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Claim 6 (Withdrawn): A method according to claim 1 wherein said step of cooling said synthesized particles comprises cooling below said reaction temperature in about 2 minutes in the presence of a cooling medium.

Claim 7 (Withdrawn): A method according to claim 6 wherein said cooling medium consists essentially of ambient atmosphere.

Claim 8 (Currently amended): A nanostucture particulate zero strain lithium titanate intercalation compound having particle sizes of less than 100 nm.

Claim 9 (Currently amended): A nanostucture particulate lithium titanate intercalation compound having particle sizes of less than 100 nm synthesized by a method comprising:

providing a homogeneous mixture of co-reactant precursors comprising nanostucture TiO₂ and at least one thermolabile source of lithium ions;

heating said mixture rapidly to a reactive annealing temperature of about 750-800°C;

holding said mixture at said annealing temperature for a period of time not substantially longer than that required to effect the maximum available reaction of said mixed precursors in synthesizing said nanostucture intercalation compound particles of less than 100 nm; and

cooling said synthesized particles rapidly to a temperature below the reaction temperature required for the synthesis of said intercalation compound, thereby preventing further growth of said particles while retaining said nanostucture.

Claim 10 (Currently amended): A rechargeable electrochemical cell comprising:

a negative electrode member comprising a first electrochemically active material;
a positive electrode member comprising a second electrochemically active material; and

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a separator member comprising an electrolyte interposed between said negative and positive electrode members; wherein at least one of said active materials comprises a nanostucture particulate zero strain lithium titanate intercalation compound having particle sizes of less than 100 nm.
